VIDEOCORDER ACCESSORY
CAMERA ADAPTOR

# CMA-3CE

SONY®
SERVICE MANUAL

## 1. GENERAL DESCRIPTION

The SONY Camera Adaptor CMA-3CE permits operation of the SONY DVC-2400ACE Portable Video Cameras with CV-Series Videocorders.

Functions of the CMA-3CE are as follows.

1. Supplies +12.6 V dc to the DVC-2400ACE cameras.
2. Reduces jitter of the HD signal from CV-Series Videocorders.
3. Transforms sine-wave sync from CV-Series Videocorders to pulse-type feed to drive the DVC-2400ACE cameras.

## 2. TECHNICAL SPECIFICATIONS

| | |
|---|---|
| DC output voltage: | +12.6 V |
| Video signal input: | 1.0 V (p-p) composite signal, sync negative, 50 Ω unbalanced |
| Video signal output: | 1.0 V (p-p) composite signal, sync negative, 75 Ω unbalanced (for Videocorder) |
| Audio input/output: | −60 dB |
| Horizontal drive signal input: | 15.625 kHz<br>Negative pulses 1 V (p-p), 75 Ω |
| Horizontal drive signal output: | 15.625 kHz<br>2 V (p-p), positive pulses |
| Vertical drive signal input/output: | 50 Hz<br>5 V (p-p) or more, negative pulses |
| Power requirements: | 110 ~ 130 V, 220 ~ 240 V, 50 Hz |
| Power consumption: | 23 W |
| Dimensions: | 214 mm (W) x 75 mm (H) x 171 mm (D) |

## 3. CIRCUIT DESCRIPTION

CMA-3CE employs a vertical-drive wave-shaping circuit, a clamp circuit and a power-supply circuit.

### Horizontal-Drive Wave-Shaping Circuit

By setting the HD Select Switch, SW003 to "~", horizontal-drive signal (sine-wave) from pin-5 of CN002 is supplied to C101. Negative peaks are clamped to ground by the clamping circuit C101 and D101. The clamped signal is amplified by Q101 and is supplied to the Hartley-type oscillator Q102. Transistor Q102 and the associated components T101, C104 and C103 form a sine-wave oscillator that runs normally at a frequency of about 15.625 kHz. This oscillator is off when the HD Select Switch is set to "⊓⊓". The output from the emitter of Q102 is supplied to Q103 through SW003. The nonlinear amplifier Q103 waveshapes the sync pulse from Q102 before feeding it to Q104. Transistor Q104 is a buffer to provide a low-impedance output at CN004.

### Vertical-Drive Wave-Shaping Circuit

A monostable multi-vibrator is employed in order to produce constant amplitude VD as triggered by CV output.

### Video Circuits

Video from the camera passes through two emitter followers, Q201 and Q202, and a set of clamps. This clamps the output of camera to the correct dc level.

### Power-Supply Circuit

A regulated dc supply voltage is supplied by the series regulator consisting of transistors Q401 and Q402 with the reference diode D402. The output voltage is set to 12.6 volts by the adjustable resistor VR401.

## 4. ADJUSTMENT

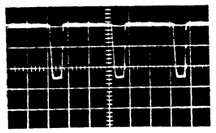
### B+ Adjustment

1. Remove the four screws that secure the cover and take off the cover.
2. Connect a dc voltmeter to the B+ OUT terminal. Adjust VR401 to obtain 12.6 V.

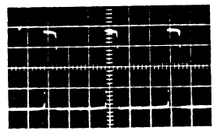
### Oscillator Frequency Adjustment

1. Set the HD Select Switch to "~". (Do not feed any HD signal into the CMA-3CE.)
2. Connect a frequency counter to the HD OUT terminal (R113). Adjust the core of T101 to obtain an oscillator frequency of 15.625 kHz ± 0.02 kHz.

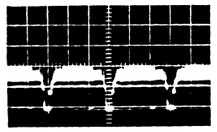
## 5. SCHEMATIC DIAGRAM



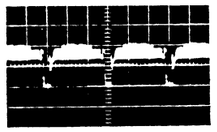
① Q102 Emitter
2.5 V (p-p)
15.625 kHz



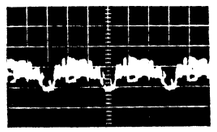
② Q104 Emitter
3.8 V (p-p)
15.625 kHz



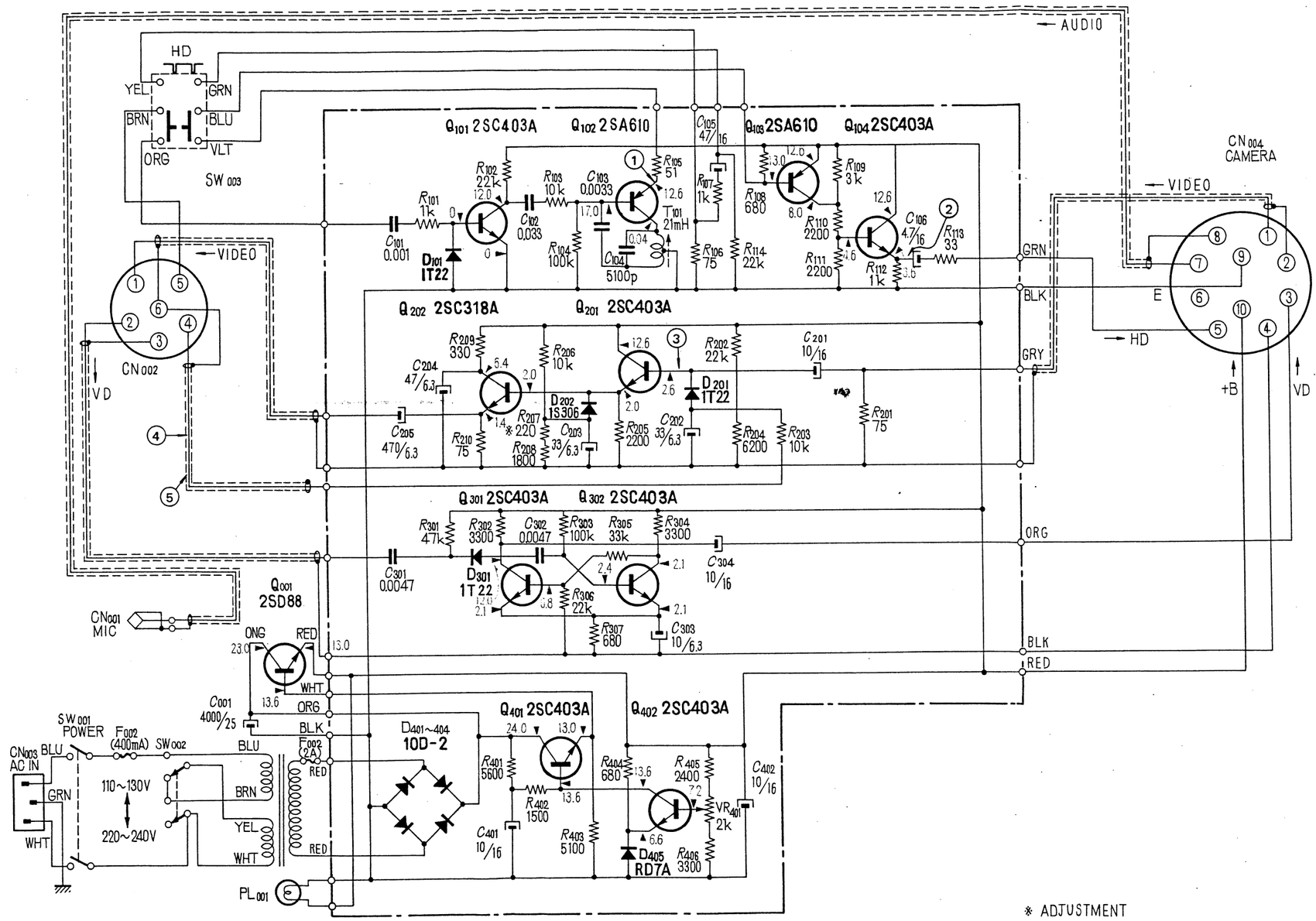
③ Q201 Base
1 V (p-p)
15.625 kHz

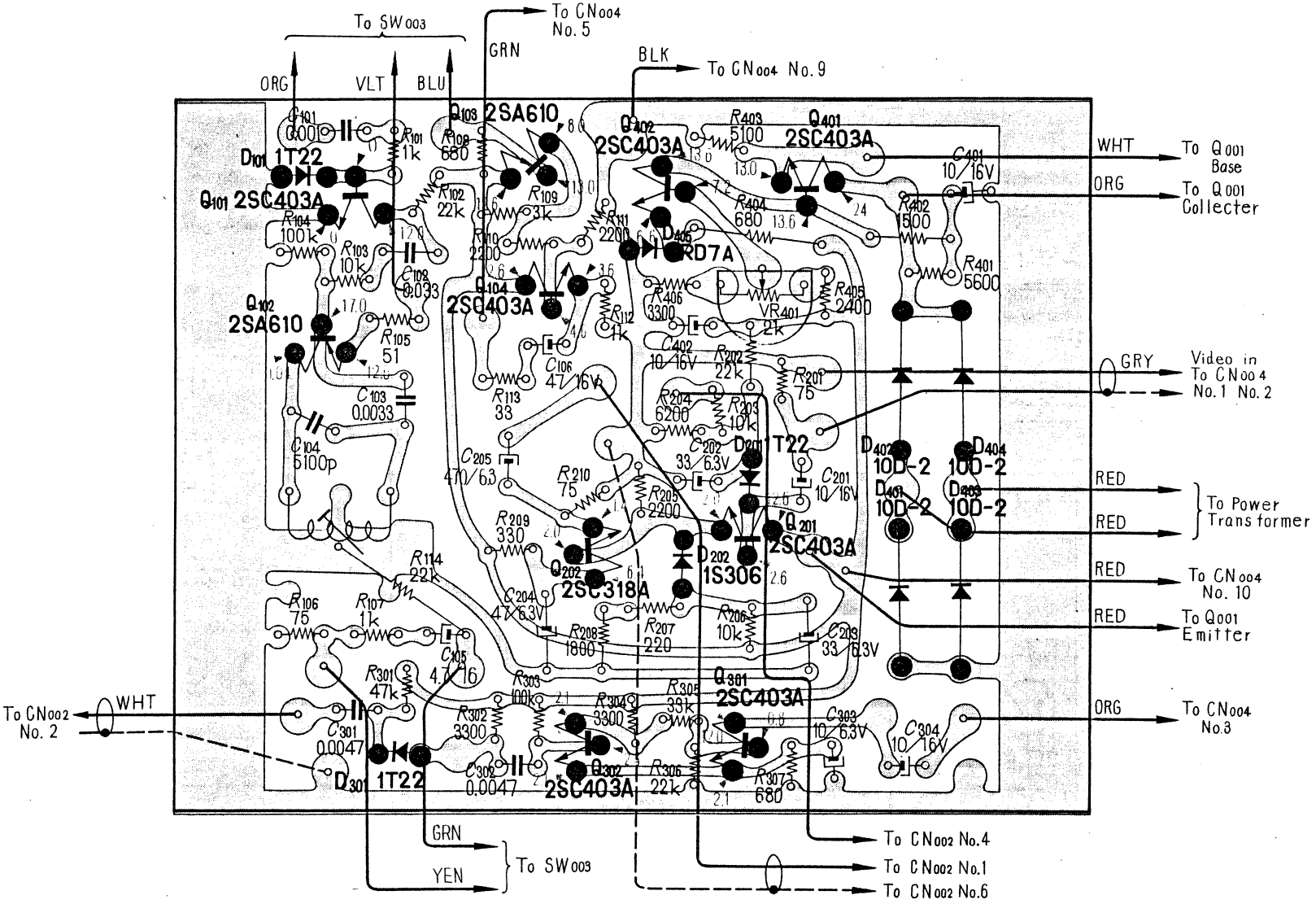


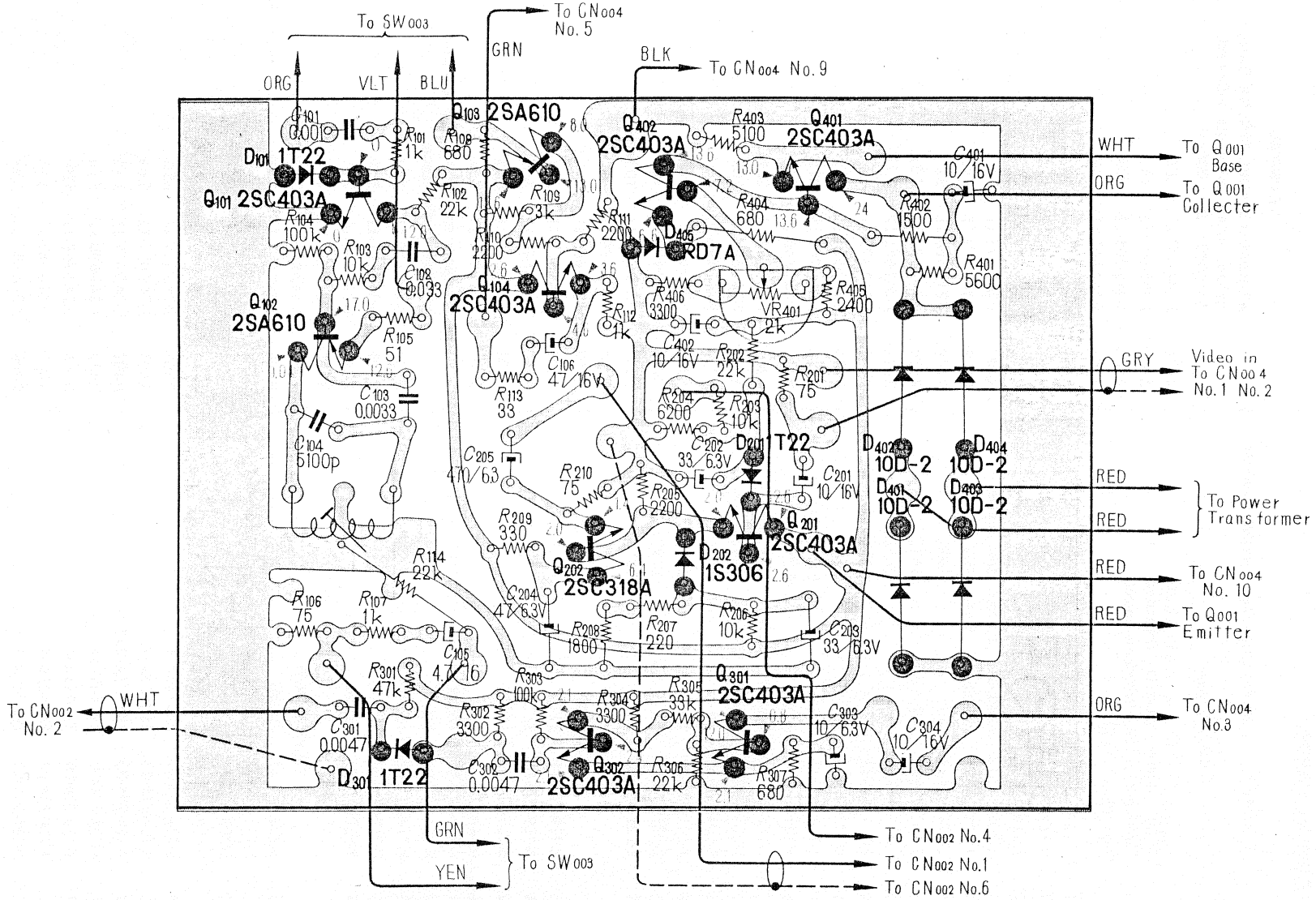
④ VIDEO OUT
1 V (p-p) 15.625 kHz
(with VTR)



⑤ VIDEO OUT
0.3 V (p-p) 15.625 kHz
(with wiper or switcher)




To SW003
ORG
VLT
BLU
To CN004 No. 5
GRN
BLK
To CN004 No. 9
Q103 2SA610
Q402 2SC403A
Q401 2SC403A
D101 1T22
Q101 2SC403A
Q102 2SA610
Q104 2SC403A
D405 RD7A
WHT
To Q001 Base
ORG
To Q001 Collecter
GRY
Video in
To CN004
No. 1 No. 2
D201 1T22
D202 1S306
Q201 2SC403A
Q202 2SC318A
D402 10D-2
D404 10D-2
D401 10D-2
D403 10D-2
RED
RED
To Power Transformer
RED
To CN004 No. 10
RED
To Q001 Emitter
Q301 2SC403A
Q302 2SC403A
D301 1T22
To CN002 No. 2
WHT
ORG
To CN004 No.3
GRN
YEN
To SW003
To CN002 No.4
To CN002 No.1
To CN002 No.6


To SW003
To CN004 No. 5
GRN
BLK
To CN004 No. 9
ORG
VLT
BLU
WHT
To Q001 Base
ORG
To Q001 Collecter
GRY
Video in To CN004 No. 1 No. 2
RED
RED
To Power Transformer
RED
To CN004 No. 10
RED
To Q001 Emitter
ORG
To CN004 No. 3
WHT
To CN002 No. 2
GRN
YEN
To SW003
To CN002 No. 4
To CN002 No. 1
To CN002 No. 6
Q101 2SC403A
Q102 2SA610
Q103 2SA610
Q104 2SC403A
Q201 2SC403A
Q202 2SC318A
Q301 2SC403A
Q302 2SC403A
Q401 2SC403A
Q402 2SC403A
D101 1T22
D201 1T22
D301 1T22
D202 1S306
D405 RD7A
D401 10D-2
D402 10D-2
D403 10D-2
D404 10D-2

## 7. PARTS LIST

*Ref. No.* *Part No.* *Description*

### ELECTRICAL PARTS

1-539-422 printed circuit board less components

#### CAPACITOR

All capacitors in microfarads, $\pm^{100}_{10}$% unless otherwise indicated. Tolerance of all electrolytic (elect) capacitors as follows.

| | | | | |
|---|---|---|---|---|
| C001 | 1-121-746-11 | 4,000 | $\pm^{100}_{15}$% | 25V, |
| C101 | 1-105-661-12 | 0.001 | ±10% | 50V, mylar |
| C102 | 1-105-679-12 | 0.033 | ±10% | 50V, mylar |
| C103 | 1-105-667-12 | 0.0033 | ±10% | 50V, mylar |
| C104 | 1-103-742-11 | 5,100pF | ±5% | 50V, styrol |
| C105 | 1-121-394-11 | 4.7 | | 16V, |
| C106 | 1-121-394-11 | 4.7 | | 16V, |
| C201 | 1-121-398-11 | 10 | | 16V, |
| C202 | 1-121-401-11 | 33 | | 6.3V, |
| C203 | 1-121-401-11 | 33 | | 6.3V, |
| C204 | 1-121-407-11 | 47 | | 6.3V, |
| C205 | 1-121-424-11 | 470 | | 6.3V, |
| C301 | 1-105-669-12 | 0.0047 | ±10% | 50V, mylar |
| C302 | 1-105-669-12 | 0.0047 | ±10% | 50V, mylar |
| C303 | 1-121-729-11 | 10 | | 6.3V, |
| C304 | 1-121-398-11 | 10 | | 16V, |
| C401 | 1-121-398-11 | 10 | | 16V, |
| C402 | 1-121-398-11 | 10 | | 16V, |

#### DIODE

| | | |
|---|---|---|
| D101 | 8-719-722-11 | 1T22 |
| D201 | 8-719-722-11 | 1T22 |
| D202 | 8-719-130-60 | 1S306 |
| D301 | 8-719-722-11 | 1T22 |
| D401 | 8-719-210-02 | 10D-2 |
| D402 | 8-719-210-02 | 10D-2 |
| D403 | 8-719-210-02 | 10D-2 |
| D404 | 8-719-210-02 | 10D-2 |
| D405 | 8-719-107-00 | RD7A |

#### TRANSISTOR

| | | |
|---|---|---|
| Q001 | 8-728-827-00 | 2SD88 |
| Q101 | 8-724-334-00 | 2SC403A-4 |
| Q102 | 8-729-761-03 | 2SA610-3 |
| Q103 | 8-729-761-03 | 2SA610-3 |
| Q104 | 8-724-334-00 | 2SC403A-4 |
| Q201 | 8-724-334-00 | 2SC403A-4 |
| Q202 | 8-723-224-00 | 2SC318A-242 |
| Q301 | 8-724-334-00 | 2SC403A-4 |
| Q302 | 8-724-334-00 | 2SC403A-4 |
| Q401 | 8-724-334-00 | 2SC403A-4 |
| Q402 | 8-724-334-00 | 2SC403A-4 |

*Ref. No.* *Part No.* *Description*

#### RESISTOR

All resistors in ohms, ±5%, ¼W fixed, carbon, unless otherwise indicated. (k=1,000 M=1,000k)

| | | |
|---|---|---|
| R001 | 1-244-649-11 | 100 |
| R101 | 1-242-673-11 | 1k |
| R102 | 1-242-705-11 | 22k |
| R103 | 1-242-697-11 | 10k |
| R104 | 1-242-721-11 | 100k |
| R105 | 1-242-642-11 | 51k |
| R106 | 1-242-646-11 | 75 |
| R107 | 1-242-673-11 | 1k |
| R108 | 1-242-669-11 | 680 |
| R109 | 1-242-684-11 | 3k |
| R110 | 1-242-681-11 | 2.2k |
| R111 | 1-242-681-11 | 2.2k |
| R112 | 1-242-673-11 | 1k |
| R113 | 1-242-637-11 | 33 |
| R114 | 1-244-705-11 | 22k |
| R201 | 1-242-646-11 | 75 |
| R202 | 1-242-705-11 | 22k |
| R203 | 1-242-697-11 | 10k |
| R204 | 1-242-692-11 | 6.2k |
| R205 | 1-242-681-11 | 2.2k |
| R206 | 1-242-697-11 | 10k |
| R207 | 1-242-649-11 | 100 |
| R207 | 1-242-656-11 | 200 |
| R207 | 1-242-660-11 | 300 |
| R207 | 1-242-663-11 | 390 |
| R207 | 1-242-666-11 | 510 |
| R207 | 1-242-668-11 | 620 |
| R207 | 1-242-671-11 | 820 |

**Note:** A resistor may be selected to yield optimum performance.

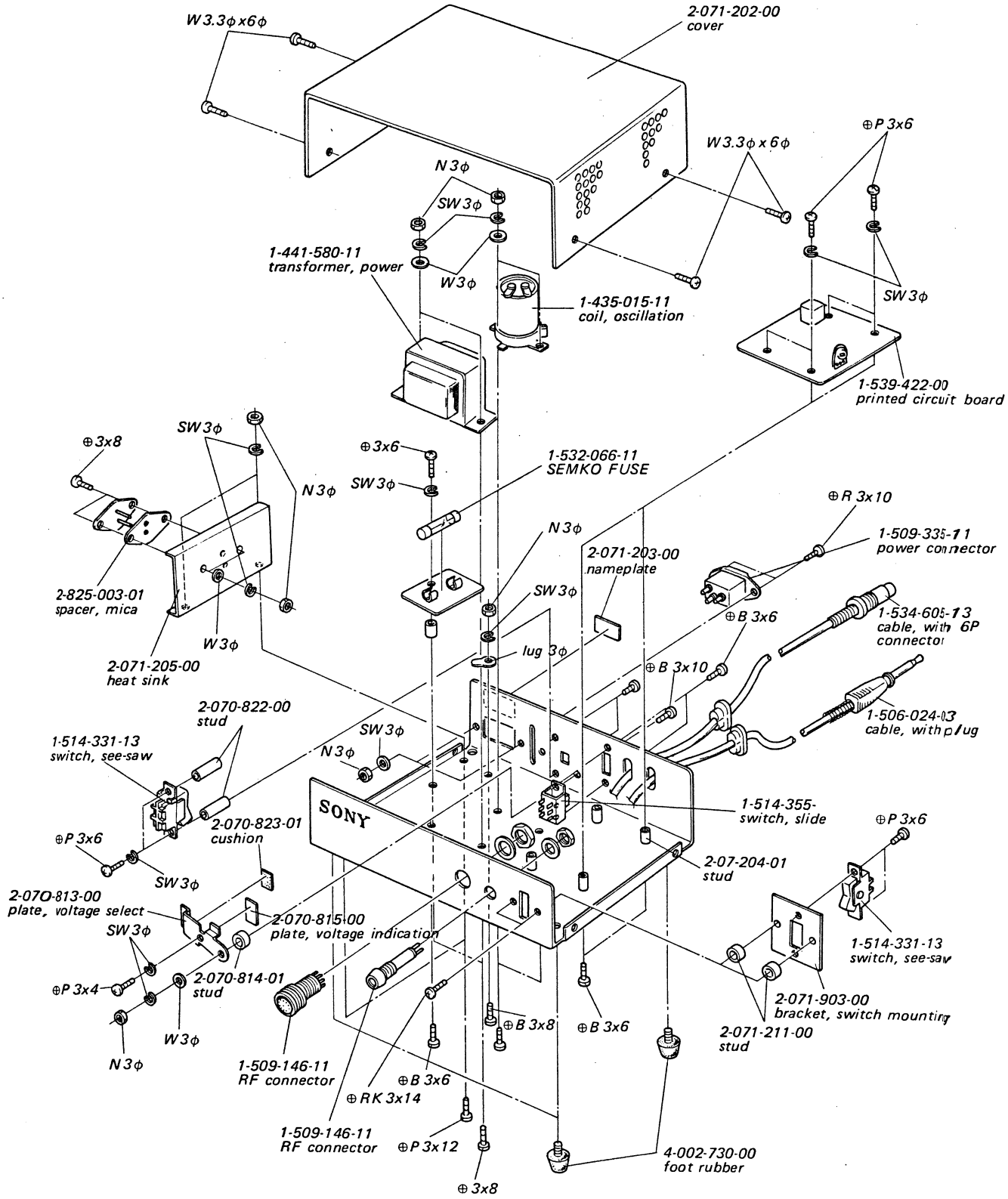
| | | |
|---|---|---|
| R208 | 1-242-679-11 | 1.8k |
| R209 | 1-242-661-11 | 330 |
| R210 | 1-242-646-11 | 75 |
| R301 | 1-242-713-11 | 47k |
| R302 | 1-242-685-11 | 3.3k |
| R303 | 1-242-721-11 | 100k |
| R304 | 1-242-685-11 | 3.3k |
| R305 | 1-242-709-11 | 33k |
| R306 | 1-242-705-11 | 22k |
| R307 | 1-242-669-11 | 680 |
| R401 | 1-242-691-11 | 5.6k |
| R402 | 1-242-677-11 | 1.5k |
| R403 | 1-242-690-11 | 5.1k |
| R404 | 1-242-669-11 | 680 |
| R405 | 1-242-682-11 | 2.4k |
| R406 | 1-242-685-11 | 3.3k |

| Ref. No. | Part No. | Description |
|---|---|---|
| | | **MISCELLANEOUS** |
| VR401 | 1-221-663-11 | resistor, variable 2 kΩ-B |
| T101 | 1-435-015-11 | coil, oscillation 21 mH |
| CN001 | 1-506-024-03 | cable, with plug |
| CN003 | 1-509-335-11 | power connector |
| CN004 | 1-509-146-11 | RF connector |
| SW001 | 1-514-331-13 | switch, see-saw |
| SW002 | 1-514-331-13 | switch, see-saw |
| SW003 | 1-514-355-23S<br>-13S | switch, slide |
| PL1 | 1-518-069-12 | pilot lamp |
| F001 | 1-532-066-11 | Semko fuse |
| F002 | 1-532-203-11 | Semko fuse |
| | 1-441-580-11 | transformer, power |
| | 1-533-066-11 | holder, 3P fuse |
| | 1-534-605-13 | cable, with 6P connector |
| | 1-536-146-11 | lug, 1L1 |

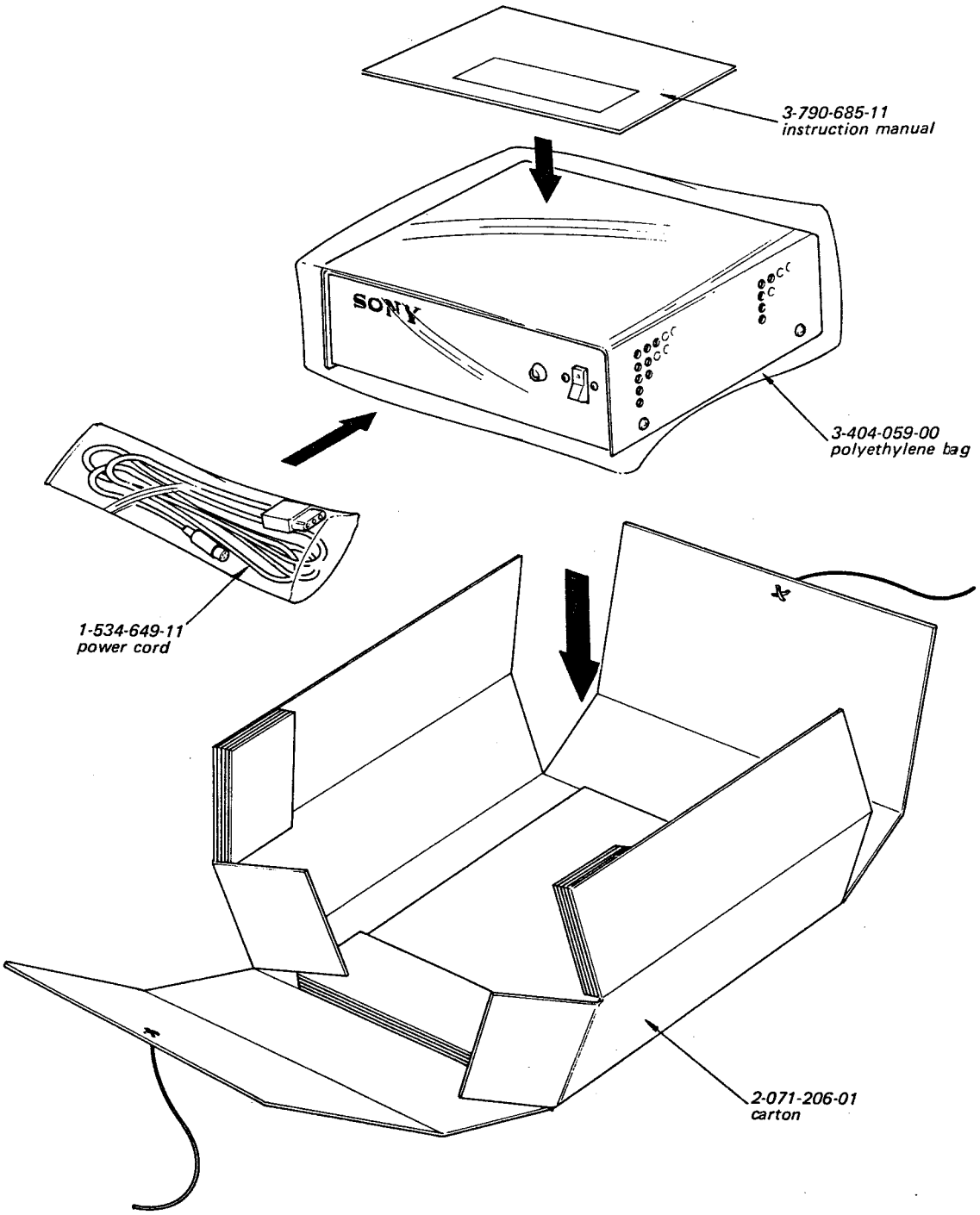
## MECHANICAL PARTS

| Ref. No. | Part No. | Description |
|---|---|---|
| | | **LUGS** |
| | 7-623-508-01 | 3 mm dia. |
| | 7-623-510-01 | 4 mm dia. |
| | | **NUTS** |
| | 7-684-013-01 | 3 mm dia. |
| | 7-684-014-01 | 4 mm dia. |
| | | **SCREWS** |
| | 7-682-145-01 | ⊕ P 3 x 4 |
| | 7-682-147-01 | ⊕ P 3 x 6 |
| | 7-682-150-01 | ⊕ P 3 x 12 |
| | 7-682-349-15 | ⊕ P 3 x 10 |
| | 7-682-351-15 | ⊕ RK 3 x 14 |
| | 7-682-547-15 | ⊕ B 3 x 6 |
| | 7-682-548-15 | ⊕ B 3 x 8 |
| | 7-682-549-15 | ⊕ B 3 x 10 |
| | 7-682-554-15 | ⊕ B 3 x 25 |
| | 7-682-562-15 | ⊕ B 4 x 10 |
| | | **WASHERS** |
| | 7-623-108-17 | washer 3 mm dia. |
| | 7-623-208-12 | spring washer 3 mm dia. |
| | 7-623-210-12 | spring washer 4 mm dia. |
| | 7-623-410-05 | ext toothed washer 4 mm dia. |
| | 7-623-908-03 | washer 3.3 mm dia. x 6 mm dia. |

## 8. EXPLODED VIEW



## PACKING


3-790-685-11
instruction manual
SONY
3-404-059-00
polyethylene bag
1-534-649-11
power cord
2-071-206-01
carton